

# INSTRUCTIONS - IR COMMO

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*Placed in file 2101 B*

Assembly of the tripod is straightforward. The longer set of legs engage the set of holes farthest apart. The legs should be unfolded to form a point at the lower end.

## BATTERY CHARGER AND BATTERIES

When a substantial portion of the ampere hour capacity of the batteries has been discharged, the batteries should be recharged. To do so remove the front cover and plug the line cord into a 115 AC line. (A link is provided in case only 230 VAC is available) Turn the function switch to position "C" and depress the charge start switch button which is located near the modulation indicator light. The indicator light will be lit and will remain lit as long as the charger is in operation. It may be necessary to depress the start button for several seconds due to capacity in the relay circuit of the charger. If the charger fails to remain in operation upon release of the start button after several attempts this indicates that the batteries are very close to a fully charged condition. The charger will cut off automatically when the battery potential has risen to a fully charged condition. It requires approximately 12 to 14 hours to charge a set of batteries which are completely discharged. The equipment should be kept in an upright position while the charger is in operation if this is possible.

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As a result of some field testing of the equipment by the manufacturer, the following procedures are recommended for establishing contact between two units.

Since the viewers are not as effective in daylight as they are in darkness, initial familiarization will probably best be done at night at moderate ranges (two or three miles)

It is assumed that the watches of the operators have been synchronized and that some particular time has been designated for the establishment of contact.

#### NIGHT OPERATION

1. Both units are assembled for operation, the legs are attached to the table and the unit is mounted in the yoke.
2. The scan mechanism is disabled by running through a complete scan (three sweeps to the left alternated with three sweeps to the right) In this condition, the instrument does not change its angle of elevation with further horizontal scanning.
3. The angle of elevation is then set approximately and the wing nuts at the side of the unit are tightened to the yoke. The azimuth setting is adjusted so that sweeping will cover the area in which the other unit is believed to be located.
4. The Function Switch is turned to "F".
5. The R-T Switch is turned to R.
6. The viewer charging switch, located just to the right of the eyepiece is depressed, and held depressed until lights in the vicinity form sharp green points on the viewer screen, or if there are no lights moon, or sometimes even stars will suffice. Keep the switch depressed for 5 to 10 seconds.

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7. At the designated time,

slowly scans the area in which

Operator A also watches through his viewer for the appearance of the light of operator B, and continues scanning until this light appears.

8. Operator B watches through his viewer for a flashing light. The duration of the flash will depend on the speed of A's sweeping, and the brightness will depend on the accuracy of alignment as well as range. At the specified initial test range of 2 or 3 miles, the light will probably be brighter than any other light visible.

9. When B sees what he thinks is the light of A, he turns his unit so that the light falls within the reticle of his viewer. (With some tubes, the background brightness is so low that the reticle will be seen only with difficulty. In this case the image is brought to the center of the screen as judged by the operator) The azimuth setting is then carefully adjusted for maximum loudness of the 1000 cycle note that will be heard with each flash. Because of the nature of the source (i.e. not steady) this adjustment will probably not be exact, but will probably be sufficiently close.

10. When the adjustment (9.) has been completed, B turns his R-T Switch to T.

11. When B completes step (10.) A will see the light of B in the viewer of the A unit. When this light appears, he turns his R-T switch to R and adjusts his azimuth setting for maximum loudness of the 1000 cycle tone being transmitted by B. Since the B transmitter is fixed, A can make this adjustment with considerable accuracy. He also will "touch up" the elevation adjustment, again for maximum loudness of B's signal.

12. When A has completed step (11.) he turns his R-T switch to T. He again watches his viewer for the appearance of B's light.

13. B, when he sees A's light according to (12.) turns his R-T switch

to R, and makes final touch-up adjustments to his azimuth and elevation settings. This time B has a steady tone on which to align, and so can do this alignment with accuracy.

14. When B has completed his alignment, he turns his function switch to OP, and his R-T switch to T, and then starts communication.

15. When A sees B's lamp in (14) he turns his R-T switch to R and his Function switch to OP.

After the initial alignment has been completed, the viewers need not be used, however it has been found that if they are used, "Break-in" operation is possible. That is, when the person who is transmitting sees the lamp of the other in his viewer, he knows that he should go into the R condition.

#### DAYTIME OPERATION

The procedure for the first seven steps are as above, except that because of the high brightness of the landscape, <sup>probably</sup> A will not be able to see the light of operator B at any time. The viewer is still useful if the collimation of it with the unit is known since the unit ~~can~~ now be quite accurately aimed at any reference landmarks that may be known.

8. During the course of his scanning, operator A must interrupt the transmission to listen for B. It is suggested that after each minute or two of scanning with the R-T Switch in the T position, operator A should make a complete scan with the R-T switch in the R position.

9. Operator B leaves his R-T switch in the R position, and slowly, very much more slowly than A, scans the area in which A is believed to be located. If A completes a horizontal scan in three or four seconds or less, a scan by B should take not less than 30 seconds. Actually the B scan should consist of a series of finite steps, each about 1/3

or less of the diameter of the reticle. Obviously, if B knows the

location of A quite accurately, he will have a smaller range of scan to make.

9a. If B does not hear A's tone after two scans, he should change the elevation by approximately  $1/3$  the height of the reticle and repeat step 9 until the B unit is aimed for the best loudness of the A tone.

10. B locks his unit and turns his R-T Switch to T. ~~Every~~ At the end of each minute for three minutes he listens, i.e. Turns the R-T switch to R and listens for a steady tone signal ( as compared to the pulses of the 1000 cycle tone heard during the A scan)

11. If A hears a tone from B's transmitter on one of his "listening scans", A immediately aligns his instrument for loudest signal. This will involve both azimuth and elevation fine adjustment. When his unit is aligned, A turns his R-T Switch to T. Each minute thereafter A turns the R-T switch to R for 10-15 seconds.

12. When B hears a steady tone from A, he makes fine adjustments on his azimuth and elevation settings for maximum loudness of signal.

The signal will be turned off after some period of time which should not exceed 1 minute. When the signal from A ceases, B turns his R-T switch to T and his function switch to OP, and starts communication.

13. When A hears voice modulation from B during his listening period as mentioned in (12) he turns his function switch to OP, and continues communication.

Since the viewers are not able to distinguish the transmitter from the background during daytime operation, Break-in operation is not possible, but each operator must wait until the other has finished his transmission.

REPLACEMENT OF COVERS

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Care should be used while replacing the covers to prevent distortion of the draw pull catches. The catches should all be fully extended before any are latched in order to prevent the catch from being wedged underneath the gasket. The catches on opposite sides of the cover should be latched in pairs for best results. Make sure that the locating tabs on the center section do not extend into the gasket groove. The tabs should pass to the inside of the innermost flange. Screw the ocular of the viewer inward before replacing the tripod platform. The microphone may be wedged into the compartment against the arms of the bellows mechanism to prevent rattle. The covers are stamped with serial numbers and should be replaced only on the corresponding units.

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